Photos by **MARC LESTER** / Anchorage Daily News

Steen Trump, a marine technician with Kinnetic Laboratories Inc., brought water samples ashore at Point Woronzof last week. The company has been doing annual tests to monitor the effect of Anchorage's sewage on Cook Inlet. Below right, Brenda Gumminger pulls up a water sample from the path of the plume that is fed by 31 million gallons of treated sewage per day.

Cook Inlet washes away city's waste

By DOUG O'HARRA
Daily News reporter

OFF POINT WORONZOF — The ebb tide had eased, revealing a faint swirling bulge in the silty, brown water at the mouth of Knik Arm.

"There it is," called Mark Savoie, an environmental consultant and oceanographer, standing on the upper deck of a 39-foot gillnetter. "The outfall."

That slight boil to the surface, about 1,000 feet off the old sewer tower beneath the Woronzof bluff, was the only visible sign of the liquid waste emerging from a 750-mile sewer network, all of it generated by the 200,000-plus people who live or work in the Anchorage Bowl.

Over the course of a day, some 31 million gallons gushes from three openings in a diffuser on the seabed there and spreads into the ocean off Anchorage's northwest tip. That's about 21,000 gallons every minute — the effluent from thousands of households, businesses and schools, a biological river with headwaters in uncounted sinks and toilets across the city.

Has Anchorage Water & Wastewater Utility's nearby plant, a quarter-mile back up the buried 12-foot-diameter pipe, removed enough solids and killed enough bacteria?

And where does this wastewater go in the Arm anyway? Does it hurt the cold, silty water there or disperse into the tide with no ill effects?

In the 15th annual survey of Anchorage's offshore sewer plume, Savoie and his team from Kinnetic Laboratories Inc. were boating in Knik Arm last week to find out.

See Page B-3, **WASTEWATER**

Schools' toilets closed

Balance of Akiak structure ruled safe

The Associated Press

BETHEL — Part of the village school in Akiak has been condemned as presenting a danger to its 120 students, according to the regional district.

A pair of first-floor bathrooms in Arlicaq School will not be used this year after a state engineer examined them last week and concluded that they are unsafe, Yupiit School District chairman Mike Williams said Saturday.

Floorboards in the bathrooms are rotting, and its walls are sagging. Compounding the problem is that a utility room with two heavy boilers stands above the bathrooms, causing worry about a floor collapse due to the building's deterioration.

Some parents said at a town meeting earlier this month that they think the K-12 school is structurally unsound, but Williams said the engineer's preliminary report states that, aside from the bathrooms, the building is safe to use this year.

"After another town meeting, we went ahead to allow the kids to go to that school," Williams said. "As much as we hate to do it, we

See Page B-5, **AKIAK**

Police chase suit settled

The Associated Press

FAIRBANKS — The city has agreed to pay nearly $500,000 to settle a wrongful death lawsuit over a 1996 fatal car crash that occurred during a police chase.

The parents of John Weaver, who was killed in the crash, will receive $350,000. Weaver was a passenger in a car struck by a vehicle being chased by Fairbanks police.

His cousin Jason Weaver will get $117,000 to compensate him for injuries suffered in the crash. The settlement also requires the city to spend $30,000 to train officers in high-speed pursuits.

Dan Hickey, the Weavers' attorney, said by phone from his Anchorage office Friday that the family is relieved that the case did not get to court.

"I think they feel that in the end the settlement accomplishes the goals that they thought

See Page B-5, **CHASE**

WASTEWATER: Cook Inlet acts as 'giant washing machine'

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Through two tide cycles and six cruises chasing a submerged drogue connected to a buoy, the team from Kinnetic would fill something like 380 bottles with water from 72 stations spread over the plume's path off Anchorage's shore. (Another round of tests had taken place off Point MacKenzie for comparison.) Later, those samples would undergo hundreds of tests.

As the boat, the Cutwater, passed over the swirl, there was no discernible bump. Within feet, the stream had been swallowed up.

Where did it go?

"Throw the drogue over," Savoie called out.

It landed with a splash. A scientific chase was on.

INTO THE WASHING MACHINE

The annual tracking of the sewer plume in Cook Inlet may be unique in the annals of wastewater regulation, according to Mike Lidgard, who writes permits for cities under the National Pollution Discharge Elimination System provisions of the Clean Water Act. He works in the Environmental Protection Agency's regional office in Seattle.

"Most places that monitor ambient water just go out and take set positions," he said. "It's pretty interesting."

Under Anchorage's 39-page EPA permit, it can send wastewater into Knik Arm after primary treatment — basically after removing most solids and killing most bacteria with chlorine. Along with only about two dozen other communities (including Honolulu and Orange, Calif.), Anchorage does not have to process its sewage to a more thorough and common secondary level.

Why not?

The answer rests on the immense power of Cook Inlet's roiling current.

The EPA grants the waiver only if wastewater goes into a "well-aerated, well-flushed marine environment" where it can be absorbed, dispersed and consumed without hurting anything, said Brian Crewdson, who oversees the city's monitoring program.

With the second-highest tidal range in North America and 5-knot currents that shift direction every six hours, the water off Anchorage's shore may be one of the most well-flushed, aerated bodies of water on the planet.

"It's like a washing machine out there," Crewdson said.

As a result, Cook Inlet appears to be ideal for absorbing Anchorage's discharge, Lidgard said.

Part of the deal, however, is that the city's utility must gather data and perform elaborate tests of the wastewater before, during and after it transits the John M. Asplund Water Pollution Control Facility at Point Woronzof. That costs the city about $150,000 each year, Crewdson said. (Other requirements mean industrial facilities, hospitals and dry cleaners in town must have their own treatment programs.)

The tests range from simple to complex, from measuring basic temperature and volume to looking for the presence of 126 toxic substances flagged by the EPA or sampling beach sites for bacteria. Some tests take place daily, others weekly or monthly.

Over the years, monitoring has revealed some strange and wonderful Anchorage characteristics. For one thing, Crewdson said, cold water enables the Woronzof plant to remove far more solids from the wastewater than expected or required by the EPA. (The plant actually burns 75 wet tons of waste a day and sends a dump truck load of ash to the city landfill.) For another, the sewage plume actually gets focused by the tide, at any moment forming a relatively narrow stream that veers away from shore.

MARC LESTER / Anchorage Daily News

Mark Savoie, Janet Savoie and Brenda Gumminger record data during an annual study of the sewage plume in Cook Inlet. Under an agreement with the Environmental Protection Agency that allows Anchorage to dump sewage in the Inlet, the city must gather data and perform elaborate tests of the wastewater before, during and after it transits the John M. Asplund Water Pollution Control Facility at Point Woronzof.

"The good news is that the plume doesn't hit near the shore on Point Woronzof," Crewdson said. "It doesn't flop back on itself when the tide changes."

During another AWWU-commissioned study two years ago, Savoie and technician Gary Lawley performed three beach trawls near the mouth of Ship Creek. They found a remarkable range of marine life — shrimp, saffron cod, smelt, starry flounders, even eels.

"I wondered if I should come back with a shrimp pot," Lawley said.

But the most critical monitoring always hinges on the plume. In 14 previous seasons, Savoie said, tests have shown the wastewater does no measurable harm.

"The current out here is so strong," he said. "It's very effective at mixing the effluent. ... The only thing you can smell sometimes is a little chlorine."

In a 10-year process caused largely by a paperwork backlog, the EPA reviewed all that data, Lidgard said. Earlier this summer, Anchorage's permit was renewed for five years, effective Aug. 2.

Most cities the size of Anchorage generate some controversy when renewing their wastewater permits. But the EPA received only one positive letter and no letters challenging the renewal or criticizing the utility during the public comment period, according to Lidgard.

"We think they're a well-operated facility and they're in compliance with their permit limits," he said. "I think they're doing a good job."

Janet Savoie, regional manager for Kinnetic Laboratories Inc., agrees.

"I think they're tiptop, actually," she said. "They seem to be a real professional group of people."

TRACKING THE PLUME

At Savoie's signal, crew members tossed over a makeshift drogue — a 6-foot-long, 2-foot-diameter baby play tunnel from a local toy store with holes cut out, weighted at the bottom and attached to an orange buoy and dive flag. By catching the current, the bright green nylon tube would track the underwater plume across a mile or more of surging tidal rips like a box kite catching a sharp breeze.

"What's the depth?" Savoie called out.

"Eleven feet," boat captain Merrick Burden replied from the flying bridge.

At Savoie's signal, a five-person crew sprang to the rails. Three people dropped cylinders for taking water samples at selected depths. Another person scrambled into a Zodiac raft tied alongside and began dipping water into jars. Janet Savoie, Mark's wife and a fellow official with Kinnetic, lowered a device that takes a basic oceanographic snapshot of Knik Arm — temperature, salinity and acidity every second on the plunge to the bottom.

For a few moments, everyone focused. A jetliner roared overhead, ascending at a steep angle from the Woronzof bluff. A gull cried out from shore. Some of the people wandering on the beach in the sunshine a few hundred yards away stopped to watch the boat and the flag as it drifted along.

When they finished, the crew rushed the bottles into crates, freezer bags and boxes. They cross-checked labels against spreadsheets. "Triple, triple, triple check everything," Janet Savoie said to herself.

And then it was over — for a few minutes.

In the blazing sunshine of the mid-August day, with a sweeping view of the Anchorage skyline, for the moment the trip seemed more like a tourist outing than a serious reality check on water quality.

Janet Savoie rummaged through the onboard coolers for a snack. Someone else made sandwiches.

"We've really toned down the food we've brought out here," she quipped. "One year, we even had a barbecue."

But the lull ended within another 20 minutes. When the drogue had drifted another 2,000 feet or so, it was time for more tests.

"OK, Merrick," Mark Savoie called from the deck. "Let's move up on the drogue."

As Burden motored to the flag, the crew stepped to its station, ready to dip into the tide.

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